

REMARKS

In response to Applicant's arguments the examiner withdrew the prior rejections as moot in view of the new ground(s) of rejection.

35 U.S.C § 102

The examiner rejected Claims 1-5, 8-16, and 18-21 under 35 U.S.C. 102(b), as being anticipated by Yee et al., US 6,016,385.

The examiner argued:

(Claim 1) Yee discloses a virtual reality encounter system comprising: a humanoid robot having tactile sensors positioned along the exterior of the robot (column 7, lines 49-58), the sensors sending tactile signals to a communications network (column 4, lines 5-8); and a body suit having tactile actuators (column 8, lines 10-15), the actuators receiving the tactile signals from the communications network (column 4, lines 5-8).

Claim 1, as originally filed, is neither described nor suggested by Yee. Claim 1 is directed to a virtual reality encounter system and includes the features of a humanoid robot having tactile sensors positioned along the exterior of the robot, the sensors sending tactile signals to a communications network; and a body suit having tactile actuators, the actuators receiving the tactile signals from the communications network.

Yee does not describe all of these features. For example claim 1 calls for a humanoid robot having tactile sensors positioned along the exterior of the robot, the sensors sending tactile signals to a communications network. Yee instead describes "The command station 12 includes a backrest 15, telescoping arm 33, support base 17 and foot pedals 18 (FIG. 2) are instrumented with position sensors (not shown) so that motions of the user are sent as motion commands to the robot 16 and are also equipped with actuators and sensors (actuators and sensors not shown) so that force and other sensory feedback signals generated by motion of the robot as it interacts with its environment result in a corresponding force and sensory feedback to the user." However, this teaching does not describe the feature of a humanoid robot having tactile sensors positioned along the exterior of the robot . . . .

Claim 1 also calls for a body suit having tactile actuators, the actuators receiving the tactile signals from the communications network. Yee does not describe a body suit, but rather

discloses a glove. Rather, Yee discloses: "a "force reflecting" glove 20 mounted on one end of an exoskeletal arm 33 whose other end is hingably attached to the backrest 15 of chair 11." The glove being attached to the "exoskeletal arm 33" that is hingably attached to the backrest 15 of a chair 11 would not describe a body suit, nor would it provide the structure and experience as that provided by claim 1.

The combination of the features of claim 1, namely the humanoid robot having tactile sensors positioned along the exterior of the robot ... and a body suit having tactile actuators ... receiving the tactile signals from the communications network.", permit a virtual reality encounter system unlike that possible with the Yee system. No where in Yee is there disclosed to position the actuators along the body suit and sensors along the robot.

This arrangement (actuators on the body suit and sensors on the robot) permits, e.g., a second operator to provide a sensation of the experience of the first operator through the first robot.

Claims 2-4, 8 and 9 are allowable at least for the reasons discussed in claim 1.

In addition for claim 5, the examiner argues that: "(Claim 5) Yee further discloses a set of goggles including a display to render the video signals received from the camera and a transducer to transduce the audio signals received from the microphone (column 4, lines 51-column 5, line 10, element 24)." Applicant disagrees. Yee does not disclose goggles but instead uses a helmet.

As for claims 10 and 19, the examiner also argued that: "(Claims 10 and 19) Yee further discloses wherein the body of the robot includes an ear canal and a microphone is positioned within the ear canal (column, line 52-column 5, line 1)." Applicant notes that Yee discloses items 48 as microphones. However the microphones are not positioned in an ear canal of the robot.

As for claim 12, the examiner also argued that: "(Claim 12) Yee further discloses the robot comprises a transmitter to wirelessly send the audio, tactile, motion, and video signals to the communications network (antenna 30). Claim 12 limits the system of claim 5 and requires that: "the robot comprises a transmitter to wirelessly send the audio signals, tactile signals, motion signals and the video signals to the communications network." Yee does not disclose a communications network.

Claim 13, as originally filed is allowable over Yee because Yee neither describes nor suggests: a method of having a virtual encounter including sending tactile signals to a communications network from tactile sensors coupled to a humanoid robot, ... positioned along

the exterior of the robot; and receiving the tactile signals from the communications network at a body suit having tactile actuators.", for analogous reasons as in claim 1.

Claims 14-16 and 18-21 are allowable over Yee for analogous reasons given by claim 1 and/or the respective dependent claims.

35 U.S.C § 103

The examiner rejected Claims 5, 6 and 17 under 35 U.S.C. 103(a) as being unpatentable over Yee et al, in view of Abbasi, US 6,786,863. The examiner argues that:

Yee discloses the virtual reality system describes wherein one user has control of a robot that duplicates the actions and motion of the operator and senses the condition of the environment of the robot, transmitting the information back to the operator to modify the operation of the robot accordingly (column 2, line 65-column 3, line 25). Yee does not describe a robot at a first location and a second set of goggles at a second location. However, Abbasi teaches a remote physical contact system and method wherein a first surrogate is at a first location, second surrogate in a second location, the second surrogate having a second microphone and second camera (Figure 1, elements 35B, 40B and 45B); a second display to receive the video signals from the first camera and second earphone to receive the audio signals from the first microphone (figure 1, elements 25, and figure 6); and further comprising a first communication gateway in the first location a second communication gateway in the second location, the second processor connected to the first processor via a network (computer network 30 between computers 15 and 25). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system and method of Yee with the teachings of Abbasi because as Yee suggests using a robot at a second location allows the operator to experience the environment of the robot "exactly the same way that a human would sense the conditions, sends signals to the operator which the operator senses in exactly the same way as if he were to take the place of the robot (column 1, lines 20-27)". Further as Abbasi teaches the use of remote surrogates expand the notion of teleconferencing or computer communications by adding a capability to engage in all types of physical contact (column 1, lines 58-64).

Yee neither describes nor suggests all of the features of the base claims, as argued above and Abbasi does not cure that deficiency. Yee being directed to a technique to remotely control a robot, is not suggestive of a virtual reality encounter system. Expressed another way, Yee is not concerned with using a robot as a surrogate to encounter a second user. Abbasi by contrast, is directed to simulated parts but not a body suit as called for by claim 1. Any purported combination of Abbasi with Yee would not provide the claimed virtual encounter but instead a much less satisfying arrangement where simulated parts as called for by Abbasi would replace

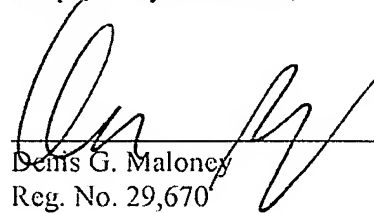
the robot as called for by Yee. The examiner has not shown any benefit of "using a robot at a second location allows the operator to experience the environment of the robot." In claim 1 and claim 6 the idea of the claimed arrangement is to have the robot as a surrogate for a human person at that location. No concept of surrogate is present in Yee.

Therefore, no combination of Abbasi would suggest the arrangements of claims 6 and 7, namely, that "the robot is at a first location and the set of goggles is at a second location ... a second humanoid robot in the second location, the second robot having a second microphone and a second camera and a second set of goggles to receive the video signals from the first camera and a second earphone to receive the audio signals from the first microphone. (claim 6)." In addition the combination of Yee with Abbasi would not suggest the features of claim 7 where "the communications network comprises a first communication gateway in the first location and a second communication gateway in the second location, the second processor connected to the first processor via a network."

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Respectfully submitted,

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